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AUTHORS' ABSTRACTS.

[Papers presented at the Philadelphia meeting of the Geological Society of America, December, 1895.]

Preglacial and Postglacial Valleys of the Cuyahoga and Rocky Rivers.

By WARREN UPHAM, St. Paul, Minn.

The Cuyahoga River, entering Lake Erie at Cleveland, occupies the same valley as before the Ice Age, but the rock-bed of the preglacial river is more than 200 feet below the present river and level of the lake. About eight miles farther west the mouth of the postglacial channel of Rocky River, eroded nearly 100 feet deep in the Erie shale, is three-fourths of a mile east of the drift-filled preglacial valley, in which a very interesting section of two deposits of till, with intervening stratified sand and fine silt, is seen along a distance of one mile of the lake shore. The glacial and stratified drift deposited in both these preglacial valleys give evidence of a recession and readvance of the ice-sheet during its general stage of formation of the numerous retreatal moraines of the district.

Four shore lines, the highest belonging to the Western Erie glacial lake, and the lower ones to the ensuing Lake Warren, are described in detail in their course through Cleveland, crossing the Cuyahoga valley. The highest or Leipsic beach is traced several miles farther east than it was before known, and is thus found to be correlative with the marginal moraine which extends from Euclid eastward, closely parallel with the lake shore.

In the closing part of this paper the glacial readvance shown by the Rocky River and Cleveland sections is compared with the glacial and interglacial deposits of Toronto and Scarboro', Ontario, which were described by Professor A. P. Coleman in the last September-October number of the JOURNAL OF GEOLOGY (Vol. III., pp. 622–645, with sections). Mr. Upham attributes the fluctuations of glaciation which are thus recorded on the north side of Lake Ontario to a time after the formation of the moraines, stratified drift, and upper till, in the vicinity of Cleveland.

After the deposition of the fossiliferous sand and clay beds of the Scarboro' Heights section, according to the view taken in this paper, an outflow east from the lake basin at Rome began. On account of the depression of the land, which brought on this final Champlain epoch of the Ice Age, the relative height of the land in the vicinity of Toronto, as compared with the depressed region about 190 miles eastward at Rome, then permitted a stream to erode its valley near Toronto to a depth below the present level of Lake Ontario. Later, and after a temporary advance and second retreat of the ice border at Scarboro' and Toronto, forming a thick till deposit, the differential reëlevation of the land, probably 200 to 300 feet more at Rome than in the west part of the Ontario basin, caused the water level of Lake Iroquois to rise gradually on the land westward until it stood at last permanently during many years at the conspicuously developed Iroquois beach.

The uppermost till of the Scarboro' Heights, that is, the second till deposit above the fossiliferous beds, seems to be a retreatal moraine, belonging to the second glacial recession, or to a third retreat after a second slight readvance, all considerably antedating the Iroquois beach, which lies above all these drift accumulations.

A Needed Term in Petrography. By L. V. PIRSSON.

The term crystal carries with it an essential idea of outward geometric form produced by plane faces arranged according to certain laws of symmetry. The studies of crystals made in the recent past have added to this conception also the idea of a necessary interior molecular structure and certain definite physical properties.

Thus, at the present time, there is no definite term to designate the more or less rounded or formless masses in which minerals occur, especially in rocks which yet possess the interior molecular structure and physical properties of crystals. For such spheroidal or formless masses the term *anhedron* (without planes) is proposed, and such mineral masses may also be spoken of as possessing an *anhedral* development.

(Other abstracts deferred to next number.)